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| **To:** | Mail Stop Appeal Brief-Patents<br>Board of Patent Appeals and Interferences<br>Commissioner for Patents<br>P.O. Box 1450<br>Alexandria, VA 22313-1450 | **From:** | Shirley A. Kopecky |
| **Fax:** | 571-273-0053 | **Phone:** | 713-483-5386 |
| **Pages:** | 23 Including cover sheet | **Fax:** | 713-483-5384/281-884-0623 |
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| **Re:** | Attorney Docket: COS-890 | **CC:** | |

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**Customer No: 25264**

In re Application of:
Jim Butler et al.

Serial No.: 10/749,259

Confirmation No.: 8566

Filed: December 31, 2003

For: USING EXCESS LEVELS OF METAL SALTS TO IMPROVE PROPERTIES WHEN INCORPORATING POLYMERS IN ASPHALT

§ Examiner: Peter Mulcahy
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§ Group Art Unit: 1713
§
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§
§ Attorney Docket No. COS-890
§
§

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**See attached Appeal Brief and related documents.**

Attorney Docket No. COS-890
Customer No: 25264

# IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | | |
|---|---|---|
| In re Application of: Jim Butler et al. | § | Examiner: Peter Mulcahy |
| Serial No.: 10/749,259 | § | |
| Confirmation No.: 8566 | § | Group Art Unit: 1713 |
| Filed: December 31, 2003 | § | |
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Mail Stop Appeal Brief-Patents
Board of Patent Appeals and Interferences
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Date: December 22, 2006

Signed: Shirley A. Kopecky
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## TRANSMITTAL LETTER AND FEE AUTHORIZATION

In connection with the above-identified application, Applicants respectfully submit the following:

1. Appeal Brief;
2. Fee Transmittal Form FY 2006; and
3. Petition for Extension of Time.

The Commissioner is hereby authorized to charge the required Appeal Brief fee of $500.00 along with the required fee of $450.00 for the Extension of Time. The Commissioner is also hereby authorized to charge any additional fees that may be required for this submission, or to credit any overpayments to Deposit Account No. 03-3345.

Attorney Docket No. COS-890
Customer No: 25264

Respectfully submitted,

Dated December 22, 2006

Shirley A. Kopecky
Registration No. 48,460
FINA TECHNOLOGY, INC.
P.O. Box 674412
Houston, Texas, 77267-4412
Telephone: 713-483-5386
Facsimile: 713-483-5384
Attorney for Applicant(s)

PTO/SB/17 (07-06)
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*Effective on 12/08/2004.*
*Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).*

# FEE TRANSMITTAL
## For FY 2006

☐ Applicant claims small entity status. See 37 CFR 1.27

| TOTAL AMOUNT OF PAYMENT | ($) | 950 |
|---|---|---|

| Complete If Known | |
|---|---|
| Application Number | 10/749,259 |
| Filing Date | 31 December 2003 |
| First Named Inventor | Jim Butler |
| Examiner Name | Peter Mulcahy |
| Art Unit | 1713 |
| Attorney Docket No. | COS-890 |

**METHOD OF PAYMENT** (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☑ Deposit Account Deposit Account Number: 03-3345 Deposit Account Name: Fina Technology, Inc.

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☑ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**

☑ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☑ Credit any overpayments

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**FEE CALCULATION**

**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

| | FILING FEES | | SEARCH FEES | | EXAMINATION FEES | | |
|---|---|---|---|---|---|---|---|
| | | Small Entity | | Small Entity | | Small Entity | |
| Application Type | Fee ($) | Fee ($) | Fee ($) | Fee ($) | Fee ($) | Fee ($) | Fees Paid ($) |
| Utility | 300 | 150 | 500 | 250 | 200 | 100 | |
| Design | 200 | 100 | 100 | 50 | 130 | 65 | |
| Plant | 200 | 100 | 300 | 150 | 160 | 80 | |
| Reissue | 300 | 150 | 500 | 250 | 600 | 300 | |
| Provisional | 200 | 100 | 0 | 0 | 0 | 0 | |

**2. EXCESS CLAIM FEES**

| Fee Description | Fee ($) | Small Entity Fee ($) |
|---|---|---|
| Each claim over 20 (including Reissues) | 50 | 25 |
| Each independent claim over 3 (including Reissues) | 200 | 100 |
| Multiple dependent claims | 360 | 180 |

| Total Claims | Extra Claims | Fee ($) | Fee Paid ($) |
|---|---|---|---|
| _____ - 20 or HP = | _____ x | _____ = | _____ |

HP = highest number of total claims paid for, if greater than 20.

| Indep. Claims | Extra Claims | Fee ($) | Fee Paid ($) |
|---|---|---|---|
| _____ - 3 or HP = | _____ x | _____ = | _____ |

HP = highest number of independent claims paid for, if greater than 3.

| Multiple Dependent Claims | |
|---|---|
| Fee ($) | Fee Paid ($) |
| _____ | _____ |

**3. APPLICATION SIZE FEE**

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

| Total Sheets | Extra Sheets | Number of each additional 50 or fraction thereof | Fee ($) | Fee Paid ($) |
|---|---|---|---|---|
| _____ - 100 = | _____ / 50 = | _____ (round up to a whole number) x | _____ = | _____ |

**4. OTHER FEE(S)**

| | Fees Paid ($) |
|---|---|
| Non-English Specification, $130 fee (no small entity discount) | |
| Other (e.g., late filing surcharge): Appeal $500; Petition Fee for Extension of Time $450 | 950 |

**SUBMITTED BY**

| | | | |
|---|---|---|---|
| Signature | | Registration No. (Attorney/Agent) 48,460 | Telephone 713-483-5366 |
| Name (Print/Type) | Shirley A. Kopecky | | Date December 22, 2006 |

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

| | | |
|---|---|---|
| In re Application of: Jim Butler et al. | § | Examiner: Peter Mulcahy |
| Serial No.: 10/749,259 | § | |
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CERTIFICATE OF TRANSMISSION

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Date: December 22, 2006

Signed: Shirley A. Kopecky
Typed or printed name of signing certificate

## APPEAL BRIEF

Appellants submit this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 1713 dated June 28, 2006, finally rejecting Claims 1-3, 5-11, 12-20, 23-24, 26, 28, 30-32, 35-37, 39-47, and 49-50.

The statutory fee of $500.00 for the filing of this Appeal Brief and the fee for the Petition for a two (2) month extension of time accompanies this Brief.

## Real Party in Interest

The present application has been assigned to Fina Technology, Inc., and was recorded in the Patent and Trademark Office on May 19, 2004 at Reel/Frame 014629/0694.

## Related Appeals and Interferences

Appellants assert that no other appeals, interferences or judicial proceedings are known to the Appellants, the Appellants' legal representative or Assignee that will directly affect, or be directly affected by or have a bearing on the Board's decision in this pending appeal.

## Status of Claims

The claims pending in the application at the time of the final rejection and the filing of the Notice of Appeal were Claims 1-3, 5-11, 12-20, 23-24, 26, 28, 30-32, 35-37, 39-47, and 49-50.

An Amendment under 37 CFR 1.116 is being currently filed with this Appeal Brief. The limitations of dependent Claim 5 have been incorporated into Claim 1, and Claim 5 has been cancelled. Further, the originally filed claims were incorrectly numbered in that no Claim 38 existed. Therefore "Claim 38" has been cancelled. Claim 37 was amended to delete an extra period, and Claim 49 was amended to correct a typographical error. The amendment helps to simplify the issues for appeal.

Thus upon entry of the amendment under 37 CFR §1.116, Claims 1-3, 6-11, 12-20, 23-24, 26, 28, 30-32, 35-37, 39-47, and 49-50 will be pending for consideration on appeal. Those pending claims are shown in the attached ***Appendix A***.

## Status of Amendments

An Amendment under 37 CFR 1.111, was sent by facsimile on April 11, 2006. It was followed by a final rejection. Subsequently an Amendment after final under 37 CFR 1.116, was sent by facsimile on August 25, 2006. However the Amendment was not entered because according to the Advisory Action of September 8, 2006, it raised new

issues that would require further consideration and/or search and such amendment was not deemed to place the application in better form for appeal.

An Amendment under 37 CFR 1.116 is being currently filed with this Appeal Brief. Since this amendment amends Claim 1 to incorporate the subject matter of Claim 5, and corrects two simple typographical errors, it is presumed that the amendment will be entered.

## Summary of Claimed Subject Matter

The invention described by the claims on appeal involves asphalt *compositions* and *methods* for preparing asphalt compositions, along with methods for road paving and building and sealing of a roof with such asphalt compositions.

In one aspect of the invention, the *method* for preparing asphalt and polymer includes: heating a mixture of asphalt and an elastomeric polymer, adding from about 0.05 weight % (wt%) up to 5 weight % (wt%) of a metal salt such as mercaptobenzothiazole (ZMBT), based on the weight of the asphalt/polymer mixture. In an aspect, the metal of the metal salt is chosen from zinc, cadmium, mercury, copper, silver, nickel, platinum, iron, magnesium, and mixtures thereof. Where the metal salt is a metal oxide, it is chosen from zinc oxide, calcium oxide and combinations thereof. In an aspect, the compatibility of the asphalt and polymer composition prepared with the metal salt amount is improved as compared with the compatibility of an identical asphalt and polymer composition having a lesser metal salt amount. A crosslinker may also be added to the asphalt mixture, and includes elemental sulfur, mercaptobenzothiazole (MBT), thiurams, mercaptobenzimidazole, and mixtures thereof; 0.01 to 0.4 wt% of the crosslinker is added, based on the weight of the asphalt/polymer mixture. In one aspect, the metal salt proportion is at least about five times greater than the crosslinker proportion. Further, ground tire rubber (GTR) may also be added to the mixture of asphalt and ranges from about 1 to about 20 wt% of the mixture. It has been found that the GTR and mixture of asphalt and an elastomeric polymer is more homogeneous as compared to an identical mixture of GTR, asphalt and elastomeric polymer where a lesser amount of metal salt is used.

As a further advantage, the asphalt and polymer compositions prepared with the metal salt amount have reduced gels as compared with the identical asphalt and polymer composition having a lesser metal salt amount.

In an alternative embodiment, the *method* for preparing asphalt and polymer compositions includes: heating a mixture of asphalt and an elastomeric polymer, adding from about 0.05 wt% up to 5 wt % of a metal oxide such as zinc oxide, iron oxide, copper oxide, magnesium oxide, calcium oxide, and combinations thereof, where the compatibility of the asphalt and polymer composition is improved as compared with the compatibility of an identical asphalt and polymer composition having a lesser metal oxide amount. In one aspect, a crosslinker such as elemental sulfur, mercaptobenzothiazole (MBT), thiurams, mercaptobenzimidazole, and mixtures thereof is also added to the mixture.

In another embodiment the *method* for preparing asphalt and polymer compositions includes: heating a mixture of asphalt and an elastomeric polymer, adding from about 0.05 wt% up to 5 wt% of a metal oxide, where the metal of the metal oxide is selected from Groups IIA and IIB of the Periodic Table (CAS notation), adding from about 1 to about 20 wt% of ground tire rubber (GTR) to the mixture of asphalt and elastomeric polymer before or after the metal oxide is added, where the GTR and mixture of asphalt and elastomeric polymer is more homogeneous as compared to an identical mixture of GTR, asphalt and elastomeric polymer having a lesser amount of metal oxide.

The invented *asphalt composition* includes: asphalt, an elastomeric polymer, and an organic or inorganic metal salt present in an amount from about 0.05 wt% up to 5 wt% based on the weight of the asphalt/polymer mixture. The metal portion of the salt can be zinc, cadmium, mercury, copper, silver, nickel, platinum, iron, magnesium, and mixtures thereof. In an aspect of the invention, the metal salt is zinc oxide, calcium oxide, and combinations thereof. The compatibility of the polymer modified asphalt (PMA) is improved as compared with the compatibility of an identical PMA having a lesser metal salt amount. In one aspect, a crosslinker chosen from elemental sulfur, mercaptobenzothiazole (MBT), thiurams, mercaptobenzimidazole, and mixtures thereof are added to the PMA. Also, ground tire rubber (GTR) can also be added to the asphalt in an amount of from about 1 to about 20 wt% of the PMA. A mixture of GTR and PMA

is more homogeneous with 0.05 wt% up to 5 wt% of the metal salt as compared to an identical mixture of GTR and PMA having a lesser amount of metal salt.

In another aspect, the invented asphalt *composition* includes: asphalt, an elastomeric polymer, and a metal oxide chosen from zinc oxide, calcium oxide and combinations thereof, in an amount at least from about 0.05 wt% up to 5 wt% based on the weight of the asphalt/polymer mixture, where the compatibility of the asphalt and polymer composition is improved as compared with the compatibility of an identical asphalt and polymer composition having a lesser metal oxide amount. In an aspect, the metal oxide is zinc oxide in an amount of from 0.05 to about 2 wt.% based on the combined amount of asphalt and elastomeric polymer. In a further aspect, the PMA also includes a crosslinker. In an aspect, the crosslinker is chosen from elemental sulfur, mercaptobenzothiazole (MBT), thiurams, mercaptobenzimidazole, and mixtures thereof. In a further aspect, the metal oxide proportion is at least about five times greater than the crosslinker proportion.

In a further aspect, the asphalt *composition* includes: asphalt, ground tire rubber (an elastomeric polymer), and metal oxide in an amount at least 0.05 wt% up to 5 wt% based on the weight of the asphalt/polymer mixture, where the metal of the metal oxide is selected from Groups IIA and IIB of the Periodic Table (CAS notation), and where the asphalt composition is more homogeneous than an identical mixture of GTR, asphalt, and elastomeric polymer having a lesser amount of metal oxide. In an aspect, the GTR ranges from about 1 to about 20 wt% of the mixture.

A method of road building is also contemplated and includes adding aggregate to the invented asphalt composition and forming a road paving material, then using the material to form road pavement.

A method of sealing a roof is also contemplated and includes heating the asphalt composition and distributing it over at least a portion of a roof surface.

## Prior Art

The prior art that was relied upon in rejecting the claims is limited to U.S. Patent No. 6,713,539 to *Guo et al.*

## Issues Presented

1. Whether the Examiner erred in rejecting Claims 1-3, 5-11, 12-20, 23-24, 26, 28, 30-32, 35-37, 39-47, and 49-50 under 35 U.S.C. §103(a) as being unpatentable over *Guo et al.*, U.S. Patent No. 6,713,539.

## Grouping of Claims

In the arguments presented in this Brief, all of the claims do not stand or fall together.

## Arguments

**I. THE EXAMINER ERRED IN REJECTING CLAIMS 1-3, 5-11, 12-20, 23-24, 26, 28, 30-32, 35-37, 39-47, AND 49-50 UNDER 35 U.S.C. §103(A) AS BEING UNPATENTABLE OVER GUO ET AL., U.S. PATENT NO. 6,713,539 BECAUSE *GUO* DOES NOT TEACH, SUGGEST, OR DISCLOSE THAT A METAL SALT OR A METAL OXIDE IMPROVES THE COMPATABILITY OF ASPHALT COMPOSITIONS.**

Claims 1-3, 5-11, 12-20, 23-24, 26, 28, 30-32, 35-37, 39-47, and 49-50 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Guo et al.*, U.S. 6,713,539. In the Final Rejection, the Examiner relies upon and references the §103(a) rejection that was made in the previous December 12, 2005, Office Action. *See* Final Office Action at Page 3, Par. 2. The December 2005 Office Action states that *Guo* teaches a sulfur crosslinking agents at "column 3 lines 50+" and that the use of the sulfur crosslinking agent in combination with the oxide compounds is rendered obvious by the *Guo* at "column 3 lines 53+" where mixtures of the compounds are identified. *See* 12/12/2005 Office Action at Page 3, Par. 12 – page 4, line 1. The Examiner further states that the incorporation of the ground tire rubber (GTR) is suggested by the dry rubber at "column 3 lines 34+" and that the use of the composition for roads and roofing is obvious from the disclosure at "column 1 lines 13+." *See* 12/12/2005 Office Action at Page 4, lines 2-4.

However, there is nothing in the *Guo* patent that teaches or suggests the features of the pending claims. First, *Guo* does not teach that adding from about 0.05 wt% up to 5 weight % of *a metal salt* to an asphalt and polymer composition improves the compatibility of the asphalt and polymer composition as compared with the compatibility of an identical asphalt and polymer composition having a lesser metal salt amount, as

recited in the pending claims. *See* Butler Claims 1, 26. *Guo* also does not teach that such compositions have reduced gel, as recited in the pending claims. *See* Butler Claims 14 and 40.

Second, *Guo* does not teach that adding from about 0.05 wt% up to 5 weight % of *a metal oxide* to an asphalt and polymer composition improves the compatibility of the asphalt and polymer composition as compared with the compatibility of an identical asphalt and polymer composition having a lesser metal oxide amount, as recited in the pending claims. *See* Butler Claim 17 et seq. and Claim 43 et seq.

Third, *Guo* does not teach that adding from about 0.05 wt% up to 5 weight % of *a metal oxide selected from Groups IIA and IIB of the Periodic Table* to an asphalt, polymer, and ground tire rubber (GTR) composition improves the homogeneity of the asphalt composition as compared with the compatibility of an identical asphalt composition having a lesser metal oxide amount, as recited in the pending claims. *See* Butler Claim 23 et seq. and Claim 49 et seq.

Fourth, *Guo* does not disclose or suggest Applicants' invention of using metal salts such as zinc oxide, mercaptobenzothiazole (MBT), and the zinc salt of mercaptobenzothiazole (ZMBT) in about 0.05 wt% up to about 5 wt% in order to increase the compatibility of an asphalt and polymer composition. Rather, *Guo* teaches the use of an ***organic polar compound*** to improve asphalt characteristics. *Guo* states that: "[t]he addition of the cross-linking reagent during the mixing of the asphalt/polymer mother liquor permits the polymer in a good dispersion state to *carry out the linking reaction with the organic polar compound in asphalt*." (Emphasis added; See Col. 7, lines 7-10). *Guo* states that: "[t]he results of present invention shows that the addition of the organic polar compounds makes the asphalt and the polymer having double bonds form a continuous phase structure through the action of the organic polar compounds.

Further, the ***comparative Example 1*** in Table 3 of *Guo* shows the preparation of asphalt without the use of a polar solvent, *Guo* teaches the use of a polysulfide -- namely cycloheptathiaimine alkylphenol (see *Guo* Col. 3, lines 63-65); however, that formulation was found to be unstable – and therefore unsuitable (see *Guo* Col. 9, lines 21-40).

The prior art reference must teach or suggest all of the limitations of the claims. *See, In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970.) Thus

there is no prima facie case of obviousness. Applicants' method of using from about 0.05 wt% up to 5 weight % of *a metal oxide or metal salt* to increase the compatability and the homogeneity of an asphalt composition as compared with the compatibility of an identical asphalt composition having a lesser metal salt amount, is novel and unobvious. This issue is similar to that decided in *Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368 (Fed. Cir. 2005)[1]. In *Perricone,* the prior art disclosed use of a skin cream to treat damaged and aged skin. The Federal Circuit held that use of the skin cream to treat skin sunburn was patentably new. *Id.* at 1378-1379. Crucial to the court's reasoning was that "skin sunburn" was construed as part of a method step, and this method step was neither disclosed in the prior art nor inherent in it. *Id.* Thus as in *Perricone*, Applicants' claimed invention is not the same method with a new use, but a new method. Similarly to *Perricone*, where the prior art reference was "silent" on the entire subject of sunburn, *Guo* is silent on the subject of using *a metal oxide or metal salt* to increase the compatibility and the homogeneity of an asphalt; thus, Applicants' claims are patentable. *Perricone,* 432 F.3d at 1377. Therefore even in view of *Guo*, Applicants' invention is unobvious and patentable, and such rejections should be reversed.

**Conclusion**

In conclusion, the references of record, either or alone or in combination, nowhere teach, show or suggest the features recited in the pending claims. Thus, Appellants respectfully request reversal of the rejections of the pending.

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[1] Although *Perricone* involved the appeal from a trial court decision, the same legal standards apply to the 35 USC § 103 issue in this appeal. One particularly relevant excerpt from that case is reproduced below. "The issue is not, as the dissent and district court imply, whether Pereira's lotion *if applied* to skin sunburn would inherently treat that damage, but whether Pereira discloses the application of its composition to skin sunburn. It does not. This court explained in *Catalina Marketing International, Inc. v. Coolsavings.com, Inc.* that a patent to an apparatus does not necessarily prevent a subsequent inventor from obtaining a patent on a new method of using the apparatus. 289 F.3d 801, 809 (Fed.Cir.2002). New uses of old products or processes are indeed patentable subject matter. *See* 35 U.S.C. § 101 (2000) (identifying as patentable "any new and useful improvements" of a process, machine, manufacture, etc.); *In re King,* 801 F.2d 1324, 1326 (Fed.Cir.1986) (principles of inherency do not prohibit a process patent for a new use of an old structure). That principle governs in this case as well." *Id.* At 1378.

"Claim 1 of the '693 patent recites a new use of the composition disclosed by Pereira, i.e., the treatment of skin sunburn." *Id.* At 1378-79. "The disclosed use of Pereira's lotion, i.e., topical application, does not suggest application of Pereira's lotion to skin sunburn. In other words, the district court's inherency analysis goes astray because it assumes what Pereira neither disclosed nor rendered inherent. Because Pereira does not disclose topical application *to skin sunburn,* this court reverses the district court's holding that Pereira anticipates claims 1-4 and 7 of the '693 patent." *Id.* At 1379.

Dated December 22, 2006

Respectfully submitted,

Shirley A. Kopecky
Registration No. 48,460
FINA TECHNOLOGY, INC.
P.O. Box 674412
Houston, Texas, 77267-4412
Telephone: 713-483-5386
Facsimile: 713-483-5384
Attorney for Appellants(s)

## Appendix A

### *Pending Claims*

**Listing of claims:**

We Claim:

1. (Currently Amended) A method for preparing asphalt and polymer compositions comprising:

heating a mixture consisting essentially of asphalt and an elastomeric polymer; ~~and~~

adding from about 0.05 wt% up to 5 weight % of a metal salt based on the weight of the asphalt/polymer mixture, where the metal of the metal salt is selected from the group consisting essentially of zinc, cadmium, mercury, copper, silver, nickel, platinum, iron, magnesium, and mixtures thereof; and

where the compatibility of the asphalt and polymer composition is improved as compared with the compatibility of an identical asphalt and polymer composition having a lesser metal salt amount.

2. (Previously Presented) The method of claim 1 where the metal salt is a metal oxide.

3. (Original) The method of claim 1 where the metal salt is a metal oxide selected from the group consisting of zinc oxide, calcium oxide and combinations thereof.

4. (Cancelled).

5. (Cancelled).

6. (Previously Presented) The method of claim 1 further comprising adding a crosslinker to the mixture.

7. (Previously Presented) The method of claim 6 where in adding the crosslinker, the crosslinker is selected from the group consisting essentially of elemental sulfur, mercaptobenzothiazole (MBT), thiurams, mercaptobenzimidazole, and mixtures thereof.

8. (Original) The method of claim 6 where the metal salt proportion is at least about five times greater than the crosslinker proportion.

9. (Original) The method of claim 6 where the crosslinker is present in an amount ranging from about 0.01 to 0.4 wt%, based on the weight of the asphalt/polymer mixture.

10. (Original) The method of claim 1 further comprising adding ground tire rubber (GTR) to the mixture of asphalt and an elastomeric polymer.

11. (Previously Presented) The method of claim 10 where the GTR ranges from about 1 to about 20 wt% of the mixture.

12. (Cancelled).

13. (Previously Presented) The method of claim 10 where the GTR and mixture of asphalt and an elastomeric polymer is more homogeneous as compared to an identical mixture of GTR, asphalt and elastomeric polymer having a lesser amount of metal salt.

14. (Original) The method of claim 1 where the asphalt and polymer compositions have reduced gel.

15. (Previously Presented) A method of road building comprising combining the asphalt and polymer compositions made by the method of claim 1 with an aggregate to form a road paving material, and using the material to form road pavement.

16. (Previously Presented) A method of sealing a roof comprising heating the asphalt and polymer compositions made by the method of claim 1 and distributing it over at least a portion of a roof surface.

17. (Previously Presented) A method for preparing asphalt and polymer compositions comprising:

heating a mixture consisting essentially of asphalt and an elastomeric polymer;

adding a metal oxide, where the metal oxide is selected from the group consisting essentially of zinc oxide, iron oxide, copper oxide, magnesium oxide calcium oxide and combinations thereof, and where the metal oxide is added in an amount at least from about 0.05 wt% up to 5 wt % based on the weight of the asphalt/polymer mixture; and

where the compatibility of the asphalt and polymer composition is improved as compared with the compatibility of an identical asphalt and polymer composition having a lesser metal oxide amount.

18. (Previously Presented) The method of claim 17 where the metal oxide is zinc oxide.

19. (Previously Presented) The method of claim 17 further comprising adding a crosslinker to the mixture.

20. (Previously Presented) The method of claim 19 where in adding the crosslinker, the crosslinker is selected from the group consisting of elemental sulfur, mercaptobenzothiazole (MBT), thiurams, mercaptobenzimidazole, and mixtures thereof.

21. (Cancelled).

22. (Cancelled).

23. (Previously Presented) A method for preparing asphalt and polymer compositions comprising:

heating a mixture consisting essentially of asphalt and an elastomeric polymer;

adding from about 0.05 wt% up to 5 wt% of a metal oxide, where the metal of the metal oxide is selected from Groups IIA and IIB of the Periodic Table (CAS notation);

adding ground tire rubber (GTR) to the mixture of asphalt and elastomeric polymer before or after the metal oxide is added; and

where the GTR and mixture of asphalt and elastomeric polymer is more homogeneous as compared to an identical mixture of GTR, asphalt and elastomeric polymer having a lesser amount of metal oxide.

24. (Previously Presented) The method of claim 23 where the GTR ranges from about 1 to about 20 wt% of the mixture.

25. (Cancelled).

26. (Previously Presented) A polymer modified asphalt (PMA) consisting essentially of:

an asphalt;

an elastomeric polymer; and

an organic or inorganic metal salt present in an amount from about 0.05 wt% up to 5 wt% based on the weight of the asphalt/polymer mixture, where the metal of the metal oxide is selected from the group consisting essentially of zinc, cadmium, mercury, copper, silver, nickel, platinum, iron, magnesium, and mixtures thereof.

27. (Cancelled).

28. (Original) The PMA of claim 26 where the metal salt is a metal oxide selected from the group consisting of zinc oxide, calcium oxide and combinations thereof.

29. (Cancelled).

30. (Previously Presented) The PMA of claim 26 where the compatibility of the PMA is improved as compared with the compatibility of an identical PMA having a lesser metal salt amount.

31. (Previously Presented) The PMA of claim 26 further consisting of a crosslinker.

32. (Previously Presented) The PMA of claim 31 where the crosslinker is selected from the group consisting of elemental sulfur, mercaptobenzothiazole (MBT), thiurams, mercaptobenzimidazole, and mixtures thereof.

33. (Cancelled).

34. (Cancelled).

35. (Previously Presented) The PMA of claim 26 further consisting of ground tire rubber (GTR).

36. (Previously Presented) The PMA of claim 35 where the GTR ranges from about 1 to about 20 wt% of the PMA.

37. (Currently Amended) The PMA of claim 35 where the metal salt is zinc oxide.

38. (Cancelled).

39. (Previously Presented) The PMA of claim 35 where the mixture of GTR and PMA is more homogeneous as compared to an identical mixture of GTR and PMA having a lesser amount of metal salt.

40. (Original) The PMA of claim 26 where the PMA has reduced gel.

41. (Original) A road made from the PMA of claim 26 and aggregate.

42. (Original) A roof sealed with the PMA of claim 26.

43. (Previously Presented) A polymer modified asphalt (PMA) consisting essentially of:

asphalt;

an elastomeric polymer;

a metal oxide present in an amount at least from about 0.05 wt% up to 5 wt% based on the weight of the asphalt/polymer mixture, where the metal oxide is selected from the group consisting essentially of zinc oxide, calcium oxide and combinations thereof; and

where the compatibility of the asphalt and polymer composition is improved as compared with the compatibility of an identical asphalt and polymer composition having a lesser metal oxide amount.

44. (Original) The PMA of claim 43 where the metal oxide is zinc oxide and the zinc oxide is present in an amount ranging from about 0.05 to about 2 wt.% based on the combined amount of asphalt and elastomeric polymer.

45. (Previously Presented) The PMA of claim 43 further consisting of a crosslinker.

46. (Previously Presented) The PMA of claim 45 where the crosslinker is selected from the group consisting of elemental sulfur, mercaptobenzothiazole (MBT), thiurams, mercaptobenzimidazole, and mixtures thereof.

47. (Original) The PMA of claim 45 where the metal oxide proportion is at least about five times greater than the crosslinker proportion.

48. (Cancelled).

49. (Currently Amended) A polymer modified asphalt (PMA) consisting essentially of:

a mixture of asphalt and an elastomeric polymer;

a metal oxide in an amount at least 0.05 wt% up to 5 wt% based on the weight of the asphalt/polymer mixture, where the metal of the metal oxide is selected from Groups IIA and IIB of the Periodic Table (CAS notation), and where the elastomeric polymer is ground tire rubber (GTR); and

where the GTR and mixture of asphalt and an elastomeric polymer is more homogeneous as compared to an identical mixture of GTR, asphalt and elastomeric polymer having a lesser amount of metal oxide.

50. (Previously Presented) The PMA of claim 49 where the GTR ranges from about 1 to about 20 wt% of the mixture.

51. (Cancelled).

## Appendix B

### *Evidence*

1. U.S. Patent No. *6,713,539* (Guo et al.).

# Appendix C

## *Related Proceedings*

Not Applicable